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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/830,140	04/23/2004	Takashi Okazoe	252019US0CONT	7426

22850 7590 11/08/2006

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EXAMINER

HU, HENRY S

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 11/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/830,140

Applicant(s)

OKAZOE ET AL.

Examiner

Henry S. Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment of September 8, 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-18 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to **Amendment** filed on September 8, 2006. With the Applicants' amendment, Claims 11-17 were all amended, while no claim was cancelled or added. To be more specific, Claims 13 and 16 were revised to use "average molecular weight", while Claims 11-12, 14-15 and 17 were amended cosmetically as well as added the definition for all substituents such as R. Applicants allege that support for claim amendment is on page 12 top section of Remarks.

With respect to specification objection, the Applicants have replaced abstract accordingly. The examiner thereby withdraws the specification objection and 112-2nd claim rejection in the previous Office Action dated June 8, 2006. **Claims 1-18** with a total of seven independent claims (**Claims 1, 10-12, 15 and 17-18**) are now pending, while nonelected **Claims 1-9 (Group I), Claim 10 (Group II), and Claim 18 (Group IV)** are still withdrawn from consideration. An action follows.

Response to Argument

2. Applicant's argument filed on September 8, 2006 has been fully considered but they are not persuasive. The focal arguments related to the patentability will be addressed as follows: In

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view of the Applicants' argument on Remarks, two 103 rejections relying on the use of secondary reference Connolly are both sustained after a close examination.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- 1. Determining the scope and contents of the prior art.
- 2. Ascertaining the differences between the prior art and the claims at issue.
- 3. Resolving the level of ordinary skill in the pertinent art.
- 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. The limitation of parent **Claim 11** in present invention relates to **a process for producing a fluorosulfonyl group-containing polymer**, characterized by polymerizing at least one member of the following compound (7-1), or at least one member of the following compound (7-1) and at least one member of a polymerizable monomer which is copolymerizable with the compound (7-1).

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Parent Claims 12, 15 and 17 are related to polymers comprising repeating units of monomer (7-1) in Claim 11; while parent Claim 17 is related to monomeric compound (7-1A), which is more specified than (7-1). See other limitations of dependent Claims 13-14 and 16.

5. Claims 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuya et al. (JP 05213929) in view of Connolly et al. (US 3,282,875) for the reasons set forth in paragraphs 7-9 of office action dated 6-8-2006 as well as the discussion below.

6. Claims 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazoe et al. (US 5,586,626 B2 or its equivalent WO 2000/56694) in view of Connolly et al. (US 3,282,875) for the reasons set forth in paragraphs 10-12 of office action dated 6-8-2006 as well as the discussion below.

7. **Applicants:** Applicants have now claimed in each of four parent Claims 11, 12, 15 and 17 an unexpected way of producing fluorosulfonyl group-containing homo- or co-polymer. For instance, it is achieved by (A) polymerizing at least one compound (7-1), or by (B) at least one compound (7-1) and at least one polymerizable co-monomer.

As discussed by Examiner, **both primary references indeed do not disclosed or suggest the structure of the claimed monomer at all.** For instance, **Kazuya** does NOT disclosed the attachment of fluorosulfonyl group onto the end position of R¹ group, while **Okazoe** does NOT disclose the attachment of fluorosulfonyl group onto the Ve-50 by any

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expectation in synthetic chemistry such as pyrolysis reaction (see page 13 bottom section and page 14 top section of Remarks).

8. Secondary reference **Connolly** cannot fix the deficiency of Kazuya or Okazoe; the motivation to link is thereby missing for both 103 rejections.

Such obtained polymers may have superior functional properties. For instance, excellent adhesion and high refractive index are found unexpected and may be applied to many applications (see page 14 middle section of Remarks).

9. **Examiner:** Current four parent **Claims 11, 12, 15 and 17** are involved in a fluorinated homo- or co-polymer containing **fluorosulfonyl functional group**.

As discussed earlier, **Kazuya** et al. have already disclosed the preparation of polymers by using monomer derived from a class of five-member-ring compounds such as **perfluoro-2-methylene-4-propyl-1,3-dioxorane** with a general chemical structure of **formula (I)**. **In a close examination**, Kazuya is silent about preparing the compound of formula (I) with fluorosulfonyl functional group to be attaching on the R^1 group at the end position.

On the other hand, **Okazoe** et al. have already disclosed the preparation of compound (Ve-50) from thermal decomposition of compound (Vd-50) with NaF powder. In a very closed examination, Okazoe is silent about two things as: (A) pyrolysis of the compound Ve-50 to

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produce trifluorovinyl group as monomeric moiety, and (B) attaching fluorosulfonyl functional group on the CF₃ group.

10. The Examiner fully understands that it may take a lot of synthetic effort so as to possibly achieve the claimed structure. However, **it is indeed a fact** that Connolly may teach based on the fact that Connolly has already prepared similar fluorine-containing polymers with **linear** monomer having ether type linkage with the attachment of fluorosulfonyl functional end group as discussed in earlier office action. The key point is that the structure skeleton of Connolly's **linear** monomer is at least somewhat similar to the claimed **cyclic** monomer compound.

As discussed in **Interview Summary** of August 11, 2006 with Attorney Cunningham, in order to be possibly distinguished from such two 103(a) rejections of Kazuya and Okazoe each individually in view of Connolly for obviousness, unexpected results with comparative examples may be helpful according to MPEP rule. However, such a superior or may be unexpected result as mentioned by Applicants has NOT included in parent claims yet. Examiner cannot and will not read specification into claims in this regard.

In order to be **further** distinguished from the teaching of secondary reference Connolly, Examiner further suggests adding some structure-property relationship particularly due to the existence of dioxole five-membered ring (cyclic) structure.

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Since claims are only amended cosmetically, all pending claims thereby carry the same scope of original limitations. Therefore, the same rational recited in the rejection of original Claims 11-17 can be applied to reject current Claims 11-17. In summary, both 103 rejections are thereby sustained due to current claim situation.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

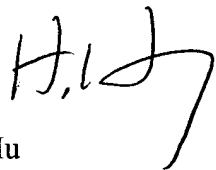
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be

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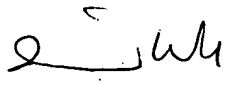
reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Henry S. Hu

Patent Examiner, Art Unit 1713, USPTO

November 3, 2006


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